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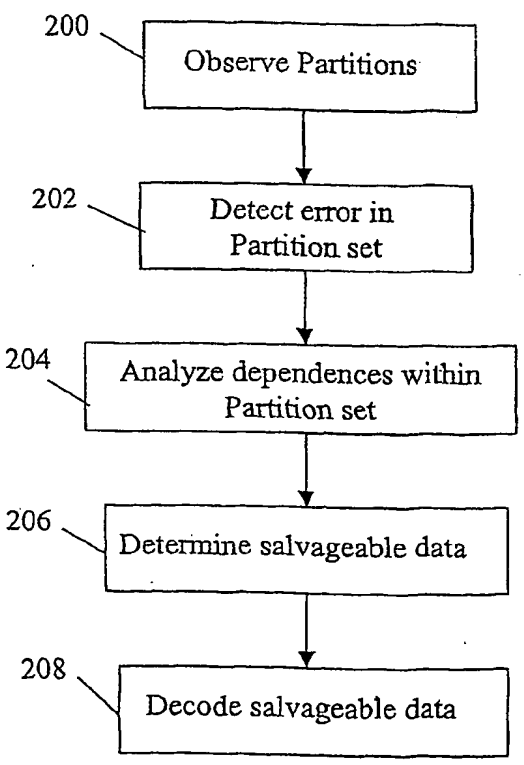
(54) Title: METHODS FOR DECODING CORRUPT JPEG2000 CODESTREAMS



(57) Abstract: The present invention provides a method for decoding corrupt codestreams for encoded digital imagery and video and, in particular, JPEG2000 codestreams with improved error resilience properties. The decoding techniques apply to a class of coding algorithms in which the data from underlying images are partitioned, typically to allow decoding of different spatial sections of the image, and the rules governing the dependencies within and perhaps between partitioned sets are known. Corrupt codestreams are decoded with improved image quality by observing the partitions imposed by the underlying algorithm (200), detecting an error in a partition set (202), analyzing the dependencies within and perhaps between the partitions (204), determining what sections of encoded data that follow the error in the partition set can be salvaged (206), and decoding those sections (208). Even though there might be errors in a particular partition, portions of that partition might still be completely or partially decodable, depending on certain modes or "switches" used during the creation of the codestream.

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 382/232,233,235,251,252,274,275

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	MARCELLIN et al. An Overview of JPEG-2000. Data Compression Conference 2000, pages 1-19, especially pages 6-14.	1-15, 17, 19, 24-29
Y	SANCHEZ et al. Robust Transmission of JPEG2000 Images Over Noisy Channels. IEEE June 2002, pages 451-456, especially pages 451-453.	1-15, 17, 19, 24-29
A	CHIANG et al. Efficient Pass-Parallel Architecture for EBCOT in JPEG2000. IEEE May 2002, pages 773-776.	1-29
A	MAN et al. An Error Resilient Coding Technique for JPEG2000. IEEE 2000, pages 364-367.	1-29
A	TAUBMAN et al. JPEG2000: Standard for Interactive Imaging. IEEE August 2002, pages 1336-1357.	1-29
A	LEE et al. Bit-Plane Error Recovery Via Cross Subband for Image Transmission in JPEG2000. IEEE August 2002, pages 149-152.	1-29
A	PAVLIDIS et al. JPEG2000 Over Noisy Communication Channels the Cost Analysis Aspect. IEEE June 2002, pages 561-564.	1-29
A	WU et al. Unequal Error Protection for Transmission of JPEG2000 Codestreams Over Noisy Channels. IEEE September 2002, pages 213-216.	1-29

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Continuation of B. FIELDS SEARCHED Item 3:
IEEE, Google
search terms: codeblock, corrupt, JPEG2000